

Chapter

7

ENVIRONMENTAL OVERVIEW

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*for the Airport Master Plan
at Grand Canyon West Airport*

7.0 INTRODUCTION

This Environmental Overview was prepared in conjunction with the recommendations and preferred alternative for development indicated in the previous Chapters of this Airport Master Plan. FAA Order 5050.4A, "Airport Environmental Handbook", stipulates those airport actions which normally require an Environmental Impact Statement (EIS), Environmental Assessment (EA), or a Categorical Exclusion (CE). FAA Order 5050.4A was developed by the FAA in order to provide airport specific criteria to the requirements set forth in the National Environmental Policy Act of 1969 (NEPA).

The proposed improvements to Grand Canyon West Airport include the following:

- Grading of the Runway Safety Area (RSA) 150' x 5,800'.
- Paving of the existing runway surface 75' x 5,200' to a strength of 12,500 pounds SWG.
- Paving of the existing apron area to a strength of 12,500 pounds SWG.
- Construction of two holding bays (one at each runway end).
- Relocation of the existing gravel access road (approximately 1,000').

These items fall within the Categorical Exclusion category and do not require additional Environmental Documentation in the form of an EA or EIS. Coordination with the FAA Los Angeles Airports District Office concluded that the proposed improvements are not considered a new runway construction, nor are they expected to surpass the impact thresholds which would require a full Environmental Assessment. This chapter provides an overview of the potential environmental impacts of the proposed airport development. The categories examined in accordance with FAA Order 5050.4A are listed in Table VII-1.

TABLE VII-1
FAA ORDER 5050.4A SPECIFIC IMPACT CATEGORIES

Social Impacts	Construction Impacts	Conversion of Farmland
Air Quality	Compatible Land Use	Solid Waste Impacts
Light Emissions	Endangered/Threatened Species	Coastal Barriers
Wetlands	Induced Socioeconomic Impacts	Noise
Wild and Scenic Rivers	Water Quality	Energy Supply and Natural Resources
Historic, Architectural, Archaeological, and Cultural Resources	Impacts to DOT Act, Section 4(f) lands (Public Recreation Areas)	Biotic Communities
Coastal Zone Management	Floodplains	

Source: FAA Order 5050.4A, Airport Environmental Handbook

7.1 SOCIAL IMPACTS

These are impacts which arise from the disruption of communities, relocation of persons, changes in employment patterns and changes in transportation patterns.

The existing airport site is located approximately 45 miles northwest of Peach Springs. Local access roads to the airport include Buck and Doe Road and Grapevine Road. Connecting arteries to these two roads include Pearce Ferry Road and Stockton Hill Road.

Planned airport improvements presented in this report would not require the closure or restriction of any of these routes; however, a 1,000 foot section of Buck and Doe Road adjacent to the south end of the Runway penetrates the Runway Safety Area and would need to be relocated. Relocation of this portion of Buck and Doe road is not expected to cause any congestion or delays in traffic flow.

An employee housing complex is situated approximately 2,000 feet east of the approach end of Runway 35. This housing complex will not be affected by the proposed improvements. Future airport improvements would occur primarily within existing airport boundaries.

7.2 INDUCED SOCIOECONOMIC IMPACTS

These secondary or indirect impacts involve major shifts in population, changes in economic climate, or shifts in levels of public service demand. The effects are directly proportional to the scope of the project under consideration.

Assessment of induced socioeconomic impacts is usually only associated with major development at large air carrier airports, which involve major terminal building development or roadway alignments and similar work. The extent of the indirect socioeconomic impacts of the proposed development is not of the magnitude that would normally be considered significant; however, positive impacts can be foreseen in the form of increased long term employment as a result of increased air traffic and increased temporary employment opportunities during the construction phase.

Temporary employment during the construction period can be estimated based on the project budget. The estimated construction-generated employment is depicted in Table VII-2. An estimated local temporary employment of 13 persons over a project period of approximately three months is consistent with actual experiences on projects of similar size and scope.

**TABLE VII-2
CONSTRUCTION-GENERATED EMPLOYMENT**

Project Budget	\$1,300,000
Labor Expenditure (\$1.3 million X 50%)	\$650,000
Average Annual Wage (Skilled and Unskilled Labor)	\$25,000
Total jobs over 3-month period (\$650,000 divided by \$25,000)	26
Local employment capture (26 x 50%)	13

7.3 AIR QUALITY

The Federal Aviation Administration, through FAA Order 5050.4A, includes an established procedure which is followed in order to determine if an air quality analysis is necessary for a proposed airport development action.

The initial step in this process is to determine whether the anticipated project has the potential for increasing airport operations, ground traffic, or parking capacity.

Forecasts of estimated aviation activity for 1996 through 2016 were developed as part of this Airport Master Plan. The forecasts, summarized in Chapter IV, estimate 37,900 aircraft operations by the end of the five year planning period and 55,000 aircraft operations by the end of the twenty year planning period. These are forecasts of aviation demand based on the completion of airport developments which would accommodate larger aircraft. The proposed improvements at Grand Canyon West Airport will allow for increased operations; however, they will not accommodate larger aircraft than are currently using the airport. The fleet mix of aircraft using Grand Canyon West Airport is expected to continue to be small (12,500 pounds or less) single and twin engine piston and turboprop aircraft. The growth of air traffic activity is not significant in terms of creating large increases in the amount of air pollution or impacts to air quality. Since the airport is a general aviation airport with less than 180,000 forecasted annual operations, an emissions inventory is not required.

7.4 WATER QUALITY

Because there are no existing water sources at Grand Canyon West Airport, no direct impacts to water quality would occur; however, the potential for erosion caused by increased storm water runoff amounts and altered drainage patterns will exist with the proposed development because of an increase in impervious paved areas. Short-term impacts to water quality caused by construction activity (erosion) will also be a factor to be considered.

There is currently no direct water supply to the Grand Canyon West Airport or surface water near the airport. The Colorado River is situated approximately 2.6 miles to the north of the airport at the base of the Canyon, over 3,600 vertical feet below the Rim, and is not expected to be impacted by the planned improvements. Potable water is delivered to the airport by truck and stored in four 5,000 gallon tanks.

The level of impact to water quality for a project of this size is expected to be minimal. Several measures can be taken during construction (such as erosion control facilities) that can reduce the effects of runoff. A Storm Water Pollution Prevention Plan and Spill Prevention Plan should be implemented to identify discharge points and minimize the potential impacts of storm water runoff.

7.5 BIOTIC COMMUNITIES

This category concerns potential impacts to existing wildlife habitat. The significance of the impacts in this category are quantified by examining both the area of land to be altered or removed and its relationship to surrounding habitat. For example, removal of a few acres of habitat which represents a small percentage of the area's total similar habitat or which supports a limited variety of common species would not be considered significant. However, removal of a sizeable percentage of the area's similar habitat, or habitat which is known to support rare species, would be considered significant impact.

The proposed airport improvements are planned to occur primarily within the existing airport boundary. Runway Safety Area grading and relocation of approximately 1,000 feet of Buck and Doe Road will occur on approximately 6.5 acres of previously undisturbed land. Vegetation in this area is composed predominately of high elevation Mohave Desertscrub with interspread Great Canyon Pinyon-Juniper Woodland type. (SWCA, 1994). A Biological Assessment for the project was conducted March 11-13, 1997 by the Hualapai Department of Natural Resources and included a physical survey of the area. A copy of the Biological Assessment report is included in the Appendix of this report. The findings of the report indicate that no plants or wildlife of concern were found in the survey area. The minimal loss of vegetation and wildlife habitat is not expected to result in a biologically adverse impact to the ecosystem structure of the area.

7.6 ENDANGERED/THREATENED SPECIES

In addition to general impacts to wildlife habitat, consideration must be given to the impacts to Threatened and Endangered species.

An Endangered Species is defined as any member of the animal or plant kingdoms determined to be in danger of extinction throughout all or a significant portion of its range. A Threatened Species is defined as any member of the plant or animal kingdoms which are likely to become endangered in the foreseeable future.

The U.S. Fish and Wildlife Service provided a list of Threatened and Endangered species for the area and included the following species:

ANIMALS

Endangered:

American peregrine falcon (*Falco peregrinus anatum*)
Hualapai Mexican Vole (*Microtus mexicanus hualapaiensis*)

Threatened:

Bald eagle (*Haliaeetus leucocephalus*)

Additional species of concern were added to the search criteria:

Additional:

Desert Bighorn sheep (*Ovis canadensis nelsoni*)
Pronghorn Antelope (*Antilocapra americana*)

PLANTS

Candidate Category 2:

Tusayan rabbitbrush (*Chrysothamnus molestus*)
Ripley wild buckwheat (*Eriogonum ripleyi*)
Freckled milk vetch (*Astragalus lentiginosus var. amgiguus*)

A Biological Assessment for the project was conducted March 11-13, 1997 by the Hualapai Department of Natural Resources and included a physical survey of the project area. A copy of the Biological Assessment report is included in the Appendix of this report. No direct sightings of any of the animal or plant species occurred during the survey. Small mammal trappings for voles were conducted for two nights and no voles were trapped. Several hoof tracks and pellet groups of pronghorn antelope were found in the survey area, however, the proposed improvements will not create any barriers to travel corridors nor disrupt any critical habitat. Wildlife fencing should be considered for installation around the airport to protect against runway incursion by animals.

The proposed airport improvements are not expected to impact any of the listed Threatened and Endangered species. Visitors to the Grand Canyon West area are

recommended to stay within established access areas and on designated trails to limit disturbance to the surrounding area.

7.7 WETLANDS

Wetlands are defined in Executive Order 11990, Protection of Wetlands, as "those areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, and natural ponds."

No wetlands areas are located in the area of proposed development.

7.8 FLOODPLAINS

Floodplains are defined by Executive Order 11988, Floodplain Management, as the lowland and relatively flat areas adjoining coastal waters "... including at a minimum, that area subject to a one percent or greater chance of flooding in any given year ... ", that is, an area which would be inundated by a 100-year flood. If a proposed development action involves a 100 year floodplain, mitigating measures must be investigated in order to avoid significant changes to the drainage system.

The project area is not located in, nor is it expected to impact any designated floodplains.

7.9 WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act (PL 90-542) describes those river areas eligible for protection from development. As a general rule, these rivers possess outstanding scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar value.

The Colorado River is situated approximately 2.6 miles to the north of the airport at the base of the Canyon, over 3,600 vertical feet below the Rim, and is not expected to be impacted by the planned development.

7.10 CONVERSION OF FARMLAND

The Farmland Protection Policy Act (FPPA) authorizes the Department of Agriculture to develop criteria for identifying the effects of Federal programs upon the conversion of farmland to uses other than agriculture.

Conversion of "Prime or Unique" farmland may be considered a significant impact. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, or fiber without intolerable soil erosion as

determined by the Secretary of Agriculture. Unique farmland is land other than prime farmland which is used to produce specific high value food and fiber crops, such as citrus, tree nuts, olives, cranberries, fruits and vegetables.

There is no farmland in the vicinity of the airport.

7.11 LIGHT EMISSIONS

Aviation lighting required for the purposes of obstruction marking, security of parked aircraft and vehicles, and visual aids to navigation are the main source of light emissions emanating from an airport. An analysis is necessary only if a proposal would introduce new airport lighting facilities which might affect residential or other sensitive land uses. The level and type of lighting installed at most small general aviation airports does not usually produce significant impacts.

The planned airport improvements do not include airport lighting or the installation of any visual aids; therefore impacts from light emissions will not occur.

7.12 SOLID WASTE IMPACTS

Wastewater is currently being handled through a septic tank/leach field system. Airport development actions which relate only to construction or expansion of runways, taxiways, and related facilities do not normally include any direct relationship to solid waste collection, control, or disposal. The existing system is expected to be adequate for the short term needs of the airport. A combination of treatment facilities, septic systems, and holding tanks are being evaluated for the combined long term needs of the airport and the planned resort complex in the area. A treatment system is expected to replace the septic system in the long term.

Solid waste containers are currently removed weekly by Mohave Disposal, based in Kingman. Any solid waste disposal facility (i.e. sanitary landfill) which is located within 1,500 meters (about 5,000 feet) of all runways planned to be used by piston-powered aircraft, or within 3,000 meters (about 10,000 feet) of all runways planned to be used by turbojets is considered by the FAA to be an incompatible land use because of the potential for conflicts between bird habitat and low-flying aircraft. This determination is found in FAA Order 5200.5, FAA Guidance Concerning Sanitary Landfills on or Near Airports. There are no solid waste disposal facilities within 10,000 feet of the airport. Any planned solid waste disposal facilities or wastewater treatment facilities should be located at least 10,000 feet from the runway.

7.13 COASTAL ZONE MANAGEMENT

Each state, where applicable, has initiated a Coastal Zone Management Program which encompasses the inland limits of the coastal zone as designated by the state. This category does not apply to the Grand Canyon West area.

7.14 COASTAL BARRIERS

The Coastal Barriers Resources Act of 1982 prohibits Federal financial aid for development taking place within the undeveloped coastal barriers occurring along the Gulf and Atlantic coasts. Consideration of this issue is not applicable to this facility.

7.15 CONSTRUCTION IMPACTS

Any construction project will generate short term environmental impacts. These may include noise and air pollution (dust and exhaust emissions) from construction equipment on the site and traversing nearby neighborhoods, air pollution from burning of refuse, and water pollution from erosion and increased siltation of downstream bodies of water.

The proposed construction will include site grading and drainage, paving, materials delivery, and related work which will have the potential to create or contribute to these adverse environmental impacts.

The short term impacts which may occur during construction are generally not considered to be significant, mostly because of the requirements for inclusion of mitigating measures, such as fugitive dust control plans and erosion control techniques, as part of the construction contracts. However, some level of impact should be expected as a by-product of the construction effort.

7.16 NOISE

The basic measure of noise is the sound pressure level which is recorded in decibels. The most important concept of considering the impact of noise on communities is that equal levels of sound pressure can be measured for both high and low frequency sounds. Generally, people are less sensitive to sounds of low frequency than they are to high frequencies. An example of this might be the difference between the rumble of automobile traffic on a nearby highway and the high pitched whine of jet aircraft overhead. At any location, over a period of time, sound pressure fluctuates considerably between high and low frequencies.

FAA Order 5050.4A, Airport Environmental Handbook, states that no noise analysis is needed unless the forecast of operations exceeds 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations. Forecasts of estimated aviation activity for 1996 through 2016 were developed as part of this Airport Master Plan. The forecasts, summarized in Chapter IV, project jet operations to exceed 700 annual operations by the end of the five year planning period; however, these are forecasts of aviation demand based on the completion of airport developments which would accommodate larger aircraft. While the proposed improvements at Grand Canyon West Airport will allow for increased aircraft operations, they will not accommodate larger aircraft than are currently using the airport. The fleet mix of aircraft using Grand Canyon West Airport are expected to continue to be small (12,500 pounds or less) single and twin-engine piston and turboprop aircraft. Actual jet operations are

expected to be less than 700 annually, unless additional airport improvements were to be made to the site, such as extending and/or strengthening the runway (which would require an environmental assessment and noise analysis prior to construction).

By limiting the planned improvements to paving the existing runway and apron only, annual operations at Grand Canyon West Airport are not expected to exceed either of the thresholds. Subsequently, no formal noise analysis was completed. However, this does not imply that no noise is generated from the airport. The proposed project will not significantly increase the level of noise output from the airport.

7.17 COMPATIBLE LAND USE

Land-use compatibility conflicts are a common problem around many airports in the United States, both for large transport airports and smaller general aviation facilities. In urban areas, as well as some rural settings, airport owners find that essential expansion to meet the demands of airport traffic is difficult to achieve due to the nearby development of incompatible land uses.

These incompatible uses typically consist of medium to high density residential areas, built in close proximity to an existing airfield prior to enactment of suitable land-use zoning legislation. The residents of these developments, with substantial investments in their homes, may view the airport and its activities as a threat to their health, safety and quality of lifestyle.

The issue of aircraft noise is generally the most apparent perceived environmental impact upon the surrounding community. Conflicts may also exist in the protection of runway approach and transition zones to assure the safety of both the flying public and the adjacent property owners. Adequate land for this use should be either owned in fee or controlled by easements.

No incompatible land uses currently exist at the Grand Canyon West Airport. A comprehensive planning effort is underway for the development of a resort complex at the Grand Canyon West Site. A hotel/casino is planned for the Quartermaster Point area, and a restaurant is planned for the Guano Point area. Appropriate measures should be taken to ensure future temporary lodging, tourist housing, waste disposal sites, and utilities are carefully planned as to not encroach on the airport. The surrounding Part 77 airspace should be protected against future penetrations through the implementation of a Height Restriction Zoning Ordinance. A model zoning ordinance is included in the Appendix of this report.

The planned development will occur primarily within the existing airport boundary and will not cause the occurrence of incompatible land uses.

7.18 ENERGY SUPPLY AND NATURAL RESOURCES

Electricity to the terminal building and nearby housing area is supplied by an 85 kilowatt (KW) generator which operates on diesel fuel. A 10,000 gallon tank provides

storage for diesel fuel which is also used for the local tour busses and maintenance vehicles. The planned improvements are not expected to cause a significant increase in energy requirements at the airport, especially since neither airport lighting nor major terminal development are planned.

7.19 IMPACTS TO DOT ACT, SECTION 4(F) LANDS (PUBLIC RECREATION AREAS)

Section 4(f) of the Department of Transportation Act states that the "Secretary shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state or local significance or land of an historic site of national, state or local significance as determined by officials having jurisdiction thereof unless there is no feasible and prudent alternative to the use of such land and such program or project includes all possible planning to minimize harm resulting from the use."

The planned improvements for Grand Canyon West Airport will occur primarily within the existing airport boundary and will not impact any Section 4(f) land. As mentioned in Section 7.17, a comprehensive planning effort is underway to establish recreation areas at the Grand Canyon West site which are in compatible locations with the airport and the proposed resort complex.

7.20 HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

The National Historic Preservation Act of 1966 requires that an initial review must be made in order to determine if any properties in or eligible for inclusion in the National Register of Historic Places are within the area of a proposed action's potential environmental impact (the area within which direct and indirect impacts could occur and thus cause a change in historic, architectural, archaeological, or cultural properties).

The Archaeological and Historic Preservation Act of 1974 provides for the survey, recovery and preservation of significant scientific, prehistorical, historical, archaeological, or paleontological data when such data may be destroyed or irreparably lost due to a Federal, federally funded, or federally licensed project.

A Cultural Resources Assessment was prepared by the Hualapai Office of Cultural Resources on July 28, 1997. A copy of the Cultural Resource Assessment report is included in the Appendix of this report. The Assessment included a physical survey of the project site and ethnographic interviews with four Tribal elders. No cultural resources were encountered during the survey.

The Office of Cultural Resources recommends cultural clearance for the paving project; however, should cultural materials be found during construction, work shall be temporarily suspended to allow for the evaluation and disposition of such resources.

7.21 SUMMARY OF ENVIRONMENTAL IMPACTS

Table VII-3 provides a summary of the analysis ratings for the twenty environmental impact categories with respect to the proposed airport improvements. While some categories indicate a potential impact, they are all below the threshold levels that would require further analysis or a full Environmental Assessment. The selected alternative for proposed development, paving the existing runway and apron, offers the least overall environmental impact of all the potential development alternatives evaluated.

**TABLE VII-3
POTENTIAL ENVIRONMENTAL IMPACTS**

Impact Category	Impact Level	Description
Social Impacts	Minor	1,000' relocation of Buck & Doe Road
Induced Socioeconomic Impacts	Minor Positive	Increased temporary employment
Air Quality	Minor	Short-term dust and exhaust
Water Quality	Minor	Storm water runoff
Biotic Communities	None	
Endangered/Threatened Species	None	
Wetlands	None	
Floodplains	None	
Wild/Scenic Rivers	None	
Conversion of Farmland	None	
Light Emissions	None	
Solid Waste Impacts	None	
Coastal Zone Management	None	
Coastal Barriers	None	
Construction Impacts	Minor	Short-term noise, dust, exhaust, erosion
Noise	Minor	Increased aircraft operations
Compatible Land Use	None	
Energy Supply/Natural Resources	None	
Public Recreation Areas	None	
Cultural Resources	None	

7.22 CUMULATIVE IMPACTS

The potential environmental impacts associated with the proposed improvements to the Grand Canyon West Airport are described in Sections 7.1 through 7.21. Development of the airport is one portion of the overall Grand Canyon West site development plan. It is important to consider potential incremental increases in impacts associated with the overall plan, not just development of the airport. Other proposed actions include improvements to Buck and Doe and Grapevine

Roads, construction of a food service facility at Guano Point, and construction and operation of a campground, a lodge, an associated lodge restaurant, and employee housing.

Improvements to Buck and Doe and Grapevine Roads, improvement of the airport, and construction of all or part of the proposed resort complex would likely result in an increase in the number of visitors to the Grand Canyon West area. Increased visitors to the Grand Canyon West area could impact the following areas:

Environmental Setting: The current setting at Guano Point and Grand Canyon West are somewhat remote and secluded. Increased visitor use and development would likely result in a more commercialized, tourist-oriented setting.

Socio-Economics: Increased visitor use would likely result in a beneficial socio-economic impact for the Enterprise and the Hualapai Tribe by generating more revenues, creating employment opportunities, and indirectly by contributing to other programs.

Air Quality: Improvements and paving of the Buck and Doe and Grapevine Roads would substantially reduce dust created by traffic on unimproved roads. Increased visitation would likely result in increased automobile and aircraft emissions.

Threatened and Endangered Species: Surveys conducted on 25% of Grand Canyon National Park in 1989 identified 58 adult pairs of falcons along the South Rim, North Rim, and Colorado River. From these surveys, it was estimated that 100 adult pairs existed in Grand Canyon National Park, spaced at an average interval of 3 to 5 miles apart (SWCA 1989). Although a substantial increase in human use and activity, depending on the location, could affect locally nesting peregrine falcons, it is unlikely that full build-out at Grand Canyon West would adversely impact the peregrine falcon population in Grand Canyon. Surveys for other species identified by the agencies have not been conducted in other areas that could potentially be developed. Additional development could impact some of these species, if present. Federal regulations require compliance with the Endangered Species Act for activities that impact federally listed species.

Cultural Resources: Cultural resource surveys have not been conducted in other areas that could potentially be developed; however, these facilities could impact this resource, if present. Federal regulations require the mitigation or avoidance of significant cultural resources.

Biological Communities/Ecosystems: Additional development at Grand Canyon West would result in loss or displacement of additional plants and wildlife associated with high elevation Mohave Desert Scrub and Great Plains Pinyon-Juniper habitats.

The cumulative impacts identified above (excerpted from the September 1994 Hwal'Bay Ba:J Enterprises Loan Package Environmental Assessment) are not tied directly to the proposed improvements to the Grand Canyon West Airport. The airport improvements are not dependent on improvements to the roads or development of the resort complex. However, improvements to the roads and construction of the resort complex is likely to increase the use demand of the airport facilities. This increased demand is likely to result in a need for future expansion of the airport facilities, including a longer and stronger runway, larger aircraft parking apron, and expanded terminal facilities. A Site Selection Study has been proposed by the Hualapai Tribe to determine the most suitable location for long term development of the airport. An Environmental Assessment or Environmental Impact Statement will be required pursuant to the Site Selection Study and prior to expansion of the existing airport or construction of a new airport facility.